Appendix C

Applicants' Earliest Constructive Reduction To Practice

Applicants' Claim (recited in proposed Count)	**Disclosure in U.S. Application No. 60/069,032, Filed December 11, 1997**	**Disclosure in U.S. Application No. 08/195,889, Filed February 10, 1994**
46. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising:	Figure 3; Page 6, line 25 to page 7, line 7; Page 7, line 27 to page 8, line 19; Page 11, lines 15-27; Pages 18 and 19.	Page 3, lines 9-19; Page 5, line 25 to page 6, line 6; Page 26, lines 22-32; Figures 6A-6B
receiving a number of images of the molecular array, each produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array;	Figure 1; Page 7, line 27 to page 8, line 19; Page 11, line 22 to page 12, line 8.	Figures 1-4C and 5; Page 14, lines 23-31; Page 25, lines 29-37; Page 26, line 22 to page 27, line 13.
estimating initial positions of selected marker features within an image of the molecular array;	Figures 10 and 11; Page 12, lines 9-16; Page 13, line 24 to page 14, line 12.	Page 26, line 22 to page 27, line 13.
calculating refined positions of the selected marker features within the image of the molecular array;	Page 13, lines 5-18; Page 16, line 2 to page 17, line 8.	Page 27, lines 14-20.
using the refined positions of the selected marker features to compute an initial coordinate system for locating features of the molecular array in the number of images of the molecular array;	Page 15, lines 15-16; Page 16, line 2 to page 17, line 8.	Page 27, line 21 to page 28, line 7.
using the initial coordinate system to locate positions of strong features within one or more images of the molecular array;	Figure 13; Page 16, lines 3-12.	Figures 6A-6B; Page 27, line 21 to page 28, line 7.
refining the positions of strong features within the one or more images of the molecular	Figure 13; Page 16, line 3-20.	Figures 6A-6B; Page 27, line 21 to page 28, line 7.

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array by analyzing data signal intensity values in regions of the one or more images of the molecular array that contain the strong features;		
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of weak features within the number of images of the molecular array;	Page 16, lines 16-20.	Page 27, line 21 to page 28, line 7.
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of local background regions surrounding all strong and weak features within the number of images of the molecular array; and	Page 16, lines 16-20.	Page 27, line 21 to page 28, line 7.
extracting data from strong features, and their respective local background regions, within the number of images of the molecular array using the refined positions of strong features within the number of images of the molecular array and extracting data from weak features, and their respective local background regions, within the number of images of the molecular array using locations for the weak features calculated from the refined coordinate system.	Page 11, lines 22-27; Page 15, lines 3-19.	Page 27, line 21 to page 28, line 7.
59. A system for automated extraction of data from a molecular array having features arranged in a regular	Figure 3; Page 3, lines 17-19; Page 6, line 25 through page 7, line 7;	Page 3, lines 9-19; Page 5, lines 25 to page 6, line 6; Page 7, lines 27-31;

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pattern, the system comprising:	Page 7, lines 17-19; Page 8, lines 14-19.	Page 26, lines 22-32.
a scanning component that produces images of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array;	Figure 1; Page 8, lines 4-13; Page 11, lines 10-21.	Figures 1-4B; Page 1, lines 21-23; Page 2, line 21 to page 3, line 19; Page 8, lines 4-9; Page 12, lines 21-27; Page 14, lines 23-31.
a computer program that processes the images of the molecular array produced by the scanning component to index features in the images of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the indexed features within images of the molecular array; and	Page 11, lines 18-27; Page 15, lines 14-29; Pages 18-19.	Page 23, lines 18-26; Page 25, lines 29-37; Page 26, line 22 to page 28, line 7.
a computer for executing the computer program.	Figures 1 and 3; Page 6, line 25 through page 7, line 7; Page 11, lines 20-27.	Page 23, lines 18-26; Page 25, lines 29-37.
64. A method for evaluating an orientation of a molecular array having features arranged in a pattern, the method comprising:	Page 3, lines 16-19.	Figures 6A and 6B; Page 26, lines 22-32.
(a) receiving an image of the molecular array produced by scanning the molecular array to determine data signals emanating from discrete positions on a surface of the molecular array;	Page 8, lines 6-9; Page 8, lines 14-19.	Figures 1A-1C, 2, 3A, 3B, 4A-4C, and 5; Page 25, lines 29-37; Page 26, lines 33-38; Page 27, lines 1-13.
(b) calculating an actual result of a function on pixels of the	Page 16, lines 8-12.	Page 27, lines 14-20.

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image lying in a second pattern;		
(c) comparing the result of step (b) with an expected result which would be obtained if the second pattern had a predetermined orientation on the array; and	Page 16, lines 15-20.	Page 27, lines 31-37.
(d) when the results of the comparison in step (c) are outside a predetermined difference, then altering the orientation of the second pattern on the array and repeating steps (b) and (c), and repeating the foregoing as needed until the results of the comparison are within the predetermined difference.	Figure 13, elements 551, 553, and 555; Page 16, lines 13-24.	Figures 6A and 6B; Page 26, line 22 to page 28, line 7.
66. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising:	Figure 3; Page 6, line 25 to page 7, line 7; Page 7, line 27 to page 8, line 19; Page 11, lines 15-27; Pages 18 and 19.	Page 3, lines 9-19; Page 5, line 25 to page 6, line 6; Page 26, lines 22-32; Figures 6A-6B
receiving an image of the molecular array, produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array;	Figure 1; Page 7, line 27 to page 8, line 19; Page 11, line 22 to page 12, line 8.	Figures 1-4C and 5; Page 14, lines 23-31; Page 25, lines 29-37; Page 26, line 22 to page 27, line 13.
estimating initial positions of selected marker features within the image of the molecular array;	Figures 10 and 11; Page 12, lines 9-16; Page 13, line 24 to page 14, line 12.	Page 26, line 22 to page 27, line 13.
calculating refined positions of the selected marker features within the image of the molecular array;	Page 13, lines 5-18; Page 16, line 2 to page 17, line 8.	Page 27, lines 14-20.
using the refined positions of	Page 15, lines 15-16;	Page 27, line 21 to page 28,

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the selected marker features to compute a grid for locating features of the molecular array in the image of the molecular array;	Page 16, line 2 to page 17, line 8.	line 7.
using the initial grid system to locate positions of strong features within the image of the molecular array;	Figure 13; Page 16, lines 3-12.	Figures 6A-6B; Page 27, line 21 to page 28, line 7.
refining the positions of strong features within the image of the molecular array by analyzing data signal intensity values in regions of the image of the molecular array that contain the strong features;	Figure 13; Page 16, line 3-20.	Figures 6A-6B; Page 27, line 21 to page 28, line 7.
using the refined positions of strong features in the image of the molecular array to calculate a refined system to locate positions of weak features within the image of the molecular array;	Page 16, lines 16-20.	Page 27, line 21 to page 28, line 7.
using the refined positions of strong features in the image of the molecular array to calculate a refined grid system to locate positions of local background regions surrounding all strong and weak features within the image of the molecular array; and	Page 16, lines 16-20.	Page 27, line 21 to page 28, line 7.
extracting data from strong features, and their respective local background regions, within the image of the molecular array using the refined positions of strong features within the image of the molecular array and extracting data from weak features, and their respective	Page 11, lines 22-27; Page 15, lines 3-19.	Page 27, line 21 to page 28, line 7.

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local background regions, within the image of the molecular array using locations for the weak features calculated from the refined grid system.		
67. A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising:	Figure 3; Page 3, lines 17-19; Page 6, line 25 through page 7, line 7; Page 7, lines 17-19; Page 8, lines 14-19.	Page 3, lines 9-19; Page 5, lines 25 to page 6, line 6; Page 7, lines 27-31; Page 26, lines 22-32.
a scanning component that produces an image of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array;	Figure 1; Page 8, lines 4-13; Page 11, lines 10-21.	Figures 1-4B; Page 1, lines 21-23; Page 2, line 21 to page 3, line 19; Page 8, lines 4-9; Page 12, lines 21-27; Page 14, lines 23-31.
a computer program that processes the image of the molecular array produced by the scanning component to identify the location of features in the image of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the located features within an image of the molecular array;	Page 11, lines 18-27; Page 15, lines 14-29; Pages 18-19.	Page 23, lines 18-26; Page 25, lines 29-37; Page 26, line 22 to page 28, line 7.
and a computer for executing the computer program.	Figures 1 and 3; Page 6, line 25 through page 7, line 7; Page 11, lines 20-27.	Page 23, lines 18-26; Page 25, lines 29-37.
68. A method for evaluating an orientation of a molecular array having features arranged in a pattern, the method comprising:	Page 3, lines 16-19.	Figures 6A and 6B; Page 26, lines 22-32.
(a) receiving an image of the molecular array produced by scanning the molecular array	Page 8, lines 6-9; Page 8, lines 14-19.	Figures 1A-1C, 2, 3A, 3B, 4A-4C, and 5; Page 25, lines 29-37;

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to determine data signals emanating from discrete positions on a surface of the molecular array;		Page 26, lines 33-38; Page 27, lines 1-13.
(b) calculating an actual result of a function on pixels of the image lying in a pattern; and	Page 16, lines 8-12.	Page 27, lines 14-20.
(c) altering the orientation of the pattern on the array and repeating steps (a) and (b) as needed until the results of the comparison are within the predetermined difference.	Figure 13; Page 16, lines 10-20.	Figures 6A and 6B; Page 27, lines 21-30; Page 28, lines 1-7.